PROFILE-DRIVEN DATA LAYOUT OPTIMIZATION

ABSTRACT OF THE INVENTION

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Data layout optimization arranges data members within memory to enhance software performance. Profiling data is consulted to determine how to group data members for an object class into groups. One technique groups the data members based on how frequently the data members are referenced in memory. Another

10 technique groups the data members based on their affinities for one another in time as determined by observing when references to the data members take place. A variety of options when collecting the profiling data and grouping the data members is supported. The data member grouping is recorded in metadata associated with a definition of the object class. At runtime, a class loader places the data members of

15 an object in memory according to the metadata. Data members of different groups can be placed in separately-loadable units of memory in the memory system. Subsequently, when the data members are referenced in memory, more frequently referenced data members, including those that tend to be referenced at times close to each other, reside at neighboring locations in the memory system.